

claimed.

What is claimed is:

CLAIMS

1. A method of automatically maintaining configuration information of a replaceable
5 electronic module, comprising:
 - receiving an indication that the replaceable electronic module has been installed;
 - receiving from the replaceable electronic module first configuration information related to capabilities of the replaceable electronic module to utilize permitted portions of its hardware or to execute permitted software; and
 - 10 storing at least some of the received first configuration information in a first persistent memory that is not on the replaceable electronic module and that is thereafter accessible by a replaceable electronic module manager regardless of whether the replaceable electronic module remains installed or is subsequently uninstalled.
- 15 2. The method of claim 1, further comprising:
 - storing the first configuration information in a second persistent memory on the replaceable electronic module; and
 - using the first configuration information stored in the second persistent memory to enable a hardware capability of the replaceable electronic module.
- 20 3. The method of claim 1, further comprising:
 - storing the first configuration information in a second persistent memory on the replaceable electronic module; and
 - using the first configuration information stored in the second persistent memory
 - 25 to enable software to be executed by the replaceable electronic module.
4. The method of claim 1, further comprising:
 - receiving an indication that the replaceable electronic module has been replaced with a replacement replaceable electronic module;
 - 30 fetching at least some of the first configuration information from the first

persistent memory;

sending the fetched first configuration information to the replacement replaceable electronic module; and

storing at least some of the sent first configuration information in a second
5 persistent memory on the replacement replaceable electronic module.

5. The method of claim 4, wherein fetching the stored first configuration information comprises:

using a location, in which the replacement replaceable electronic module was
10 installed, to select the stored first configuration information from among other information stored in the first persistent memory.

6. The method of claim 4, further comprising:

receiving from the replacement replaceable electronic module second
15 information; and

wherein fetching the stored first configuration information comprises using at least part of the received second information to select the stored first configuration information from among other information stored in the first persistent memory.

20 7. The method of claim 4, further comprising:

using the stored first configuration information in the second persistent memory to enable a hardware capability of the replacement replaceable electronic module, wherein a corresponding hardware capability was enabled on the replaceable electronic module, which was replaced.

25

8. The method of claim 4, further comprising:

storing the sent first configuration information in a second persistent memory on the replaceable electronic module; and

using the stored first configuration information to enable software to be
30 executed by the replacement replaceable electronic module, wherein corresponding software was enabled to be executed by the replaceable electronic module, which was

replaced.

9. A method of automatically maintaining configuration information of a replaceable electronic module, comprising:

5 receiving an indication that the replaceable electronic module has been installed;
automatically detecting if the replaceable electronic module is a replacement
replaceable electronic module that replaces a previously installed replaceable electronic
module; and

if the replaceable electronic module is a replacement replaceable electronic
10 module, sending previously stored first configuration information to the replacement
replaceable electronic module.

10. The method of claim 9, further comprising:

storing the sent first configuration information in a persistent memory on the
15 replacement replaceable electronic module; and

using the first configuration information stored on the replacement replaceable
electronic module to enable a hardware capability of the replacement replaceable
electronic module.

20 11. The method of claim 10, wherein:

the enabled hardware capability of the replacement replaceable electronic module
corresponds to a hardware capability that was enabled on the previously installed
replaceable electronic module, which was replaced.

25 12. The method of claim 9, further comprising:

storing the sent first configuration information in a persistent memory on the
replacement replaceable electronic module; and

using the first configuration information stored on the replacement replaceable
electronic module to enable software to be executed by the replacement replaceable
30 electronic module.

13. The method of claim 12 wherein:

the software enabled to be executed by the replacement replaceable electronic module corresponds to software that was enabled to be executed by the previously installed replaceable electronic module, which was replaced.

5

14. The method of claim 9, wherein the automatically detecting comprises:

receiving second information from the replacement replaceable electronic module; and

analyzing the received second information.

10

15. The method of claim 14, wherein the analyzing comprises:

comparing at least a portion of the received second information to the previously stored first configuration information.

15

16. The method of claim 9, wherein the automatically detecting comprises:

comparing a location, in which the replacement replaceable electronic module was installed, to a location in which the previously installed replaceable electronic module, which was replaced, was installed.

20

17. A method of upgrading a replaceable electronic module, comprising:

storing configuration information in a persistent memory on the replaceable electronic module, wherein the configuration information enables a previously unenabled capability of the replaceable electronic module; and

25

storing the configuration information in a persistent memory located off the replaceable electronic module.

18. The method of claim 17, wherein the previously unenabled capability is a hardware capability or an ability to execute software.

30

19. A method of dynamically maintaining configuration information of a replaceable electronic module, comprising:

detecting when the replaceable electronic module is assigned a function;
sending previously stored configuration information to the replaceable electronic module, wherein the previously stored configuration information corresponds to the assigned function; and

5 storing the configuration information on the replaceable electronic module, wherein the configuration information enables the replaceable electronic module to utilize a hardware capability of the replaceable electronic module or enables software to be executed by the replaceable electronic module.

10 20. The method of claim 19, wherein the assigned function is a logical connection to a disk drive.

21. The method of claim 20, wherein the configuration information enables the replaceable electronic module to execute software stored on the disk drive.

15 22. A replaceable electronic module, comprising:
a persistent memory; and
a replaceable electronic module controller configured to:
enable capabilities of the replaceable electronic module according to
20 configuration information stored in the persistent memory;
send at least a portion of the configuration information stored in the persistent memory to an automatic replaceable electronic module manager; and
receive replacement configuration information from the automatic replaceable electronic module manager and store the replacement configuration
25 information in the persistent memory.

23. The replaceable electronic module of claim 22, wherein the replaceable electronic module controller is further configured to notify the automatic replaceable electronic module manager when the replaceable electronic module is installed.

30 24. The replaceable electronic module of claim 22, further comprising at least one

electronic component; and wherein the configuration information stored in the persistent memory indicates if all or a portion of the at least one hardware component is permitted to be used.

5 25. The replaceable electronic module of claim 24, wherein the at least one electronic component comprises a plurality of processors.

26. The replaceable electronic module of claim 22, wherein the configuration information stored in the persistent memory comprises a serial number of the replaceable
10 electronic module.

27. The replaceable electronic module of claim 22, wherein the configuration information stored in the persistent memory comprises a license key.

15 28. The replaceable electronic module of claim 22, wherein the configuration information stored in the persistent memory indicates if the replaceable electronic module is permitted to execute predetermined software.

29. The replaceable electronic module of claim 22, wherein the replaceable electronic
20 module is a blade.

30. The replaceable electronic module of claim 22, wherein the replaceable electronic module is an integrated circuit.

25 31. The replaceable electronic module of claim 22, wherein the replaceable electronic module is a disk drive.

32. An electronic system for automatically maintaining configuration information in a replaceable electronic module, comprising:
30 the replaceable electronic module and an automatic replaceable electronic module manager;

wherein the replaceable electronic module comprises:

a first persistent memory; and

a controller configured to:

enable capabilities of the replaceable electronic module according
5 to configuration information stored in the first persistent memory;

send at least a portion of the configuration information stored in
the first persistent memory to the automatic replaceable electronic module
manager; and

receive replacement configuration information from the automatic
10 replaceable electronic module manager and store the replacement
configuration information in the first persistent memory; and

wherein the automatic replaceable electronic module manager comprises:

a second persistent memory; and

wherein the automatic replaceable electronic module manager is configured to:

15 receive the configuration information sent by the replaceable electronic
module;

store the configuration information received from the replaceable
electronic module in the second persistent memory; and

20 send at least a portion of the configuration information stored in the
second persistent memory to the replaceable electronic module as the replacement
configuration information.

33. The electronic system of claim 32, wherein the controller is further configured to
notify the automatic replaceable electronic module manager when the replaceable
25 electronic module is installed.

34. The electronic system of claim 32, wherein the replaceable electronic module
further comprises at least one electronic component; and wherein the configuration
information stored in the first persistent memory indicates if all or a portion of the at least
30 one hardware component is permitted to be used.

35. The electronic system of claim 32, wherein the at least one electronic component comprises a plurality of processors.

36. The electronic system of claim 32, wherein the configuration information stored
5 in the first persistent memory comprises a serial number of the replaceable electronic module.

37. The electronic system of claim 32, wherein the configuration information stored
10 in the first persistent memory comprises a license key.

38. The electronic system of claim 32, wherein the configuration information stored
in the first persistent memory indicates if the replaceable electronic module is permitted
to execute predetermined software.

39. The electronic system of claim 32, wherein the replaceable electronic module is a
15 blade.

40. The electronic system of claim 32, wherein the replaceable electronic module is
an integrated circuit.

41. The electronic system of claim 32, wherein the replaceable electronic module is a
20 disk drive.

42. A method of licensing software for execution by a replaceable electronic module,
25 the replaceable electronic module being installed in, and removable from, a system that
includes an automatic replaceable electronic module manager, comprising:

providing a license key for the software, the license key comprising data;

providing the license key to the replaceable electronic module, thereby enabling
the software to be executed by the replaceable electronic module;

30 sending the license key from the replaceable electronic module to the automatic
replaceable electronic module manager; and

storing the license key in a first persistent memory that is not on the replaceable electronic module and that is thereafter accessible by the automatic replaceable electronic module manager regardless of whether the replaceable electronic module remains installed or is subsequently removed the system.

5

43. The method of claim 42, further comprising:

replacing the replaceable electronic module with a replacement replaceable electronic module;

fetching at least some of the configuration information from the first persistent
10 memory;

sending the fetched first configuration information to the replacement replaceable electronic module; and

storing at least some of the sent configuration information in a second persistent memory on the replacement replaceable electronic module, thereby enabling the software
15 to be executed by the replacement replaceable electronic module.